WHAT IS CLAIMED IS:

1. A test medium for proving a turbine meter, said test medium comprising a gas having the following characteristics:

(a) Density > approximately 2xDensity of Natural Gas;

(b) Dynamic Viscosity approximately < Dynamic Viscosity of Natural Gas; and

(c) Ideal gas behavior for approximately 15°C < T < 25°C and approximately 1 bar < P < 50 bar.

2. A test medium for proving a turbine meter according to claim 1, wherein said gas further has the following characteristic:

(d) Liquefies easily at a temperature > approximately -100°C at atmospheric pressure.

3. A test medium for proving a turbine meter according to claim 1, wherein said gas further has the following characteristic:

(e) Stores at room temperature in liquid form at approximately P < 65 bar.

4. A test medium for proving a turbine meter according to claim 1, wherein said gas is carbon dioxide.

5. A test medium for proving a turbine meter according to claim 1, wherein said gas is selected from a group consisting of carbon dioxide, argon and sulphur hexafluoride.

6. A method for proving a turbine meter comprising:

arranging a meter to be proved in a prover system; and

circulating a test medium through the prover system such that it passes through a reference meter and said meter to be proved, wherein said test medium is a gas having the following characteristics:

(a) Density > approximately 2xDensity of Natural Gas;

(b) Dynamic Viscosity approximately < Dynamic Viscosity of Natural Gas; and

(c) Ideal gas behavior for approximately 15°C < T < 25°C and approximately 1 bar < P < 50 bar.

7. A method for proving a turbine meter according to claim 6, wherein said gas further has the following characteristic:

(d) Liquefies easily at a temperature > approximately -100°C at atmospheric pressure.

8. A method for proving a turbine meter according to claim 6, wherein said gas further has the following characteristic:

(e) Stores at room temperature in liquid form at approximately P < 65 bar.

9. A method for proving a turbine meter according to claim 6, wherein said gas is circulated through said prover system at a pressure of approximately 8 bar and a temperature of approximately 20°C.

10. A method for proving a turbine meter according to claim 6, wherein said gas is carbon dioxide.

11. A method for proving a turbine meter according to claim 6, wherein said gas is selected from a group consisting of carbon dioxide, argon and sulphur hexafluoride.

12. A method for proving a turbine meter according to claim 6, further comprising:

injecting liquefied test medium into said circulating test medium.

13. A system for proving a turbine meter comprising:

a test bench for mounting a meter to be proved;

a reference meter;

a test medium circulation system, arranged with said test bench and reference meter, for circulating a test medium through said reference meter and a mounted meter to be proved; and

a test medium for circulating through said test medium circulation system, said test medium comprising a gas having the following characteristics:

(a) Density > approximately 2xDensity of Natural Gas;

(b) Dynamic Viscosity approximately < Dynamic Viscosity of Natural Gas; and

(c) Ideal gas behavior for approximately 15°C < T < 25°C and approximately 1 bar < P < 50 bar.

14. A system for proving a turbine meter according to claim 13, wherein said gas further has the following characteristic:

(d) Liquefies easily at a temperature > approximately -100°C at atmospheric pressure.

15. A system for proving a turbine meter according to claim 13, wherein said gas further has the following characteristic:

(e) Stores at room temperature in liquid form at approximately P < 65 bar.

16. A system for proving a turbine meter according to claim 13, wherein said test medium circulation system comprises:

a fill valve for inputting said test medium into said test medium circulation system;

a compressor for pressurizing said test medium circulation system;

a variable speed motor for driving said compressor and adjusting a pressure of said test medium circulation system;

flow straighteners arranged in advance of each of said reference meter and said test bench;

a pressure control valve;

means for cooling said test medium; and

pipes for connecting all of the foregoing elements.

17. A system for proving a turbine meter according to claim 13, wherein said gas is carbon dioxide.

18. A system for proving a turbine meter according to claim 13, wherein said gas is selected from a group consisting of carbon dioxide, argon and sulphur hexafluoride.

19. A system for proving a turbine meter according to claim 16, wherein said means for cooling said test medium comprises:

one or more injection nozzles for injecting liquefied test medium into said test medium circulation system.

20. A system for proving a turbine meter according to claim 16, wherein said means for cooling said test medium comprises a heat exchanger.

21. A method for cooling a test medium circulating in a turbine meter prover system comprising:

injecting liquefied test medium into said circulating test medium.

22. A method for cooling a test medium circulating in a turbine meter prover system according to claim 21, wherein said test medium has the following characteristic:

Latent heat of vaporization > approximately 200 Btu/kg at $15°C < T < 25$ and $1 \text{ bar} < P < 25 \text{ bar}$.

23. A system for cooling a test medium circulating in a turbine meter prover system comprising:

one or more injection nozzles provided to said prover system for injecting liquefied test medium into said test medium prover system.

24. A system cooling a test medium circulating in a turbine meter prover system according to claim 23,wherein said test medium has the following characteristic:

Latent heat of vaporization > approximately 200 BTU/kg at 15°C < T < 25 and 1 bar < P < 25 bar.